

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT OF 1942, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'2580'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 30th day of April in the year of our Lord one thousand nine hundred and ninety-three.

Attest:

Kenneth H. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Mike Egan
Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

| | | | |
|---|---|---|---|
| 1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Pioneer Hi-Bred International, Inc. | | 2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. WBA963A5 | 3. VARIETY NAME '2580' AAA 11 Mar 1993 |
| 4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) Dept. of Wheat Breeding R.R. 1 Box 297A Windfall, IN 46076 | | 5. PHONE (include area code) (317) 945-7906 | FOR OFFICIAL USE ONLY PVPO NUMBER 9200160 F I L I N G Date April 17, 1992 Time <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M. F E E S Filing and Examination Fee: \$ 2150.- Date April 17, 1992 Certificate Fee: \$ 250.00 Date April 6, 1993 |
| 6. GENUS AND SPECIES NAME Triticum aestivum | 7. FAMILY NAME (Botanical) gramineae | | |
| 8. CROP KIND NAME (Common Name) Wheat | 9. DATE OF DETERMINATION August 1, 1990 | | |
| 10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation | | | |
| 11. IF INCORPORATED, GIVE STATE OF INCORPORATION Iowa | | 12. DATE OF INCORPORATION May 1926 | |
| 13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. Gregory C. Marshall Pioneer Hi-Bred International, Inc. R.R. 1 Box 297A Windfall, IN 46076 | | | |

PHONE (include area code): **(317) 945-7906**

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

- a. ☒ Exhibit A, Origin and Breeding History of the Variety.
- b. ☒ Exhibit B, Novelty Statement.
- c. ☒ Exhibit C, Objective Description of Variety
- d. ☒ Exhibit D, Additional Description of Variety
- e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
- f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office **4/16/92**
- g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)
☐ YES (If "YES," answer items 16 and 17 below) ☒ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?
☐ YES (If "YES," give names of countries and dates)
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

| | | |
|---|---|------------------------|
| SIGNATURE OF APPLICANT (Owner(s)) Gregory C. Marshall | CAPACITY OR TITLE Coordinator of Soft Winter Wheat Breeding | DATE 4/16/92 |
| SIGNATURE OF APPLICANT (Owner(s)) | CAPACITY OR TITLE | DATE |

14A. Exhibit A. Origin and Breeding History of Pioneer Wheat
Cultivar ~~WBA963A5~~. 2580' AAA
11/11/1993

Pioneer cultivar 'WBA963A5', *Triticum aestivum* L. em Thell, a soft red winter wheat was developed by Pioneer Hi-Bred International, Inc. from the single cross: Pioneer line 'W0030'/Pioneer line 'W9019A'. Pioneer line W0030 was an F4 derived bulk from which Pioneer cultivar 2548 was later selected. Pioneer line W9019A was derived from the cross: Pioneer line 'W521'/'S76'. The parentage of Pioneer line W521 is one quarter CIMMYT spring wheat and three quarters unknown soft red winter wheat. S76 is a soft red winter wheat cultivar developed and released by Pioneer in 1976.

The single cross: Pioneer line W0030/Pioneer line W9019A, was made in the spring greenhouse cycle of 1981 and designated 'WBA963'. The F1 was grown in a headrow and harvested in bulk the summer of 1982. The bulk F2 seed was planted in an observation plot in the fall of 1982 at Windfall, IN. Individual heads were selected and harvested to produce 37 F3 headrows the following year. In the summer of 1984 a single row was selected (E15-5). Four heads from E15-5 were grown at St. Matthews, SC the following year in F4 headrows. Heads were harvested from selected F4 headrows, which were grown in F5 headrows in 1986. In the fall of 1986, F5 head selections were grown in F6 headrows. In the summer of 1987 a single F6 headrow at St. Matthews (SI237-94) was cut in bulk and entered into a preliminary yield test, designated as WBA963A5. WBA963A5 has been tested for yield, agronomic traits, and milling and baking quality since 1988.

In the F8 generation 200 heads were harvested from a small bulk increase and used to plant 200 purification headrows surrounded by a 0.13 acre bulk increase in the fall of 1989. Off-type rows were destroyed and 100 rows were individually cut and threshed. The seed from individual headrows and the bulk increase constituted the original source of breeder seed and was turned over to Pioneer's Parent Seed Department for further increase. WBA963A5 was designated 'YW504' and 'XW504' after the 1990 and 1991 harvests, respectively. If a decision is made to release WBA963A5 following the 1992 harvest, a commercial code will be assigned for variety name.



PIONEER HI-BRED INTERNATIONAL, INC.
PLANT BREEDING DIVISION

DEPARTMENT OF CEREAL SEED BREEDING
R.R. #1 • BOX 297A
WINDFALL, INDIANA 46076
PHONE (317) 945-7906

9200160
AAA 4 Dec 1992

November 30, 1992

Alan A. Atchley, Plant Variety Examiner
Plant Variety Protection Office, AMS, USDA
NAL Building, Room 500
10301 Baltimore Blvd.
Beltsville, MD 20705-2351

Subject: PVP Application No. 9200160, Wheat variety <WBA963A5>
No. 9200162, Wheat variety <WBB441D1>

Dear Mr. Atchley:

In response to your letter dated November 19, 1992 (copy enclosed), I am providing you with the following information. Please advise me if this information needs to be provided in a different format, or if revisions of the applications need to be resubmitted.

<WBA963A5> has been observed to be stable and uniform since the seventh generation, or the last five generations.

Both wheat varieties <WBA963A5> and <WBB441D1> were bred and selected for disease resistance, plant type, plant height, head type, straw strength, maturity, grain yield, test weight, and milling and baking qualities.

Also note the enclosed copy of a letter I sent to the Commissioner in October, notifying your office of the variety names assigned to these two and another variety. <WBA963A5> and <WBB441D1> have been assigned the variety names '2580' and '2571', respectively. Please advise me of any action I must take to update these variety names on the applications. Thank you for your assistance.

Sincerely,

Dr. Gregory C. Marshall
Coordinator of Soft Winter Wheat Breeding

encl:
gm

14B. Novelty Statement

9200160

'2580' AAA 10 Mar 1993
~~WBA963A5~~ is most similar to Pioneer cultivar 2548. One parent of WBA963A5 is an F4 derived bulk from which 2548 was later selected. Despite their similarities, there are several distinct differences between WBA963A5 and 2548. Within its area of adaptation, the grain yield of WBA963A5 is about 15% greater than that of 2548 (Table 1). WBA963A5, on average, heads 8.7 days earlier and is 12 cm taller than 2548. Leaf rust resistance is similar to 2548, however powdery mildew resistance of WBA963A5 is greater than that of 2548. The flag leaf of WBA963A5 is erect and twisted at boot stage while that of 2548 is recurved and not twisted. The glumes of WBA963A5 are long in length while those of 2548 are medium in length. The head of WBA963A5 is dense while that of 2548 is lax.

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN AND SEED DIVISION
BELTSVILLE, MARYLAND 20785

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

Pioneer Hi-Bred International, Inc.

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

Dept. of Wheat Breeding

R.R. 1 Box 297A

Windfall, IN 46076

FOR OFFICIAL USE ONLY

PVPO NUMBER

VARIETY NAME OR TEMPORARY
DESIGNATION

WDA963A5

9200160
2580' AAA 11/11/93
(temporary des.)

Place the appropriate number that describes the varietal character of this variety in the boxes below.

Place a zero in first box (e.g. 089 or 09) when number is either 99 or less or 9 or less.

1. KIND:

1 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

2 1 = SPRING 2 = WINTER 3 = OTHER (Specify) 1 1 = SOFT 2 = HARD 3 = OTHER (Specify)

2 1 = WHITE 2 = RED 3 = OTHER (Specify)

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

131 FIRST FLOWERING 138 LAST FLOWERING

4. MATURITY (50% Flowering):

03 NO. OF DAYS EARLIER THAN 7 1 = ARTHUR 2 = SCOUT 3 = CHRIS
 NO. OF DAYS LATER THAN 4 = LEMHI 5 = HUGAINES 6 = LEEDS 7. FL302

5. PLANT HEIGHT (From soil level to top of head):

094 CM. HIGH

01 CM. TALLER THAN 7

CM. SHORTER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS
4 = LEMHI 5 = HUGAINES 6 = LEEDS 7. FL302

6. PLANT COLOR AT BOOTING (See reverse):

2 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHUR COLOR:

1 1 = YELLOW 2 = PURPLE

8. STEM:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT

2 Waxy bloom: 1 = ABSENT 2 = PRESENT

2 Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

1 Internodes: 1 = HOLLOW 2 = SOLID

04 NO. OF NODES (Originating from node above ground)

19 CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT

1 Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

1 Flag leaf at booting stage: 1 = ERECT 2 = RECURVED
3 = OTHER (Specify):

2 Flag leaf: 1 = NOT TWISTED 2 = TWISTED

1 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

2 Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

13 MM. LEAF WIDTH (First leaf below flag leaf)

24 CM. LEAF LENGTH (First leaf below flag leaf):

11. HEAD:

Density: 1 = LAX 2 = DENSE
 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE
 4 = OTHER (Specify) _____

Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED
 5 = BROWN 6 = BLACK 7 = OTHER (Specify) _____

CM. LENGTH
 MM. WIDTH

12. GLUMES AT MATURITY:

Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)
 3 = LONG (CA. 9 mm.)
 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)
 3 = WIDE (CA. 4 mm.)

Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED
 4 = SQUARE 5 = ELEVATED 6 = APICULATE
 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL
 Cheek: 1 = ROUNDED 2 = ANGULAR

Brush: 1 = SHORT 2 = MEDIUM 3 = LONG
 Brush: 1 = NOT COLLARED 2 = COLLARED

Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN
 4 = BROWN 5 = BLACK

Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

MM. LENGTH
 MM. WIDTH
 GM. PER 1000 SEEDS

17. SEED CREASE:

Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'
 2 = 80% OR LESS OF KERNEL 'CHRIS'
 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'
 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'
 2 = 35% OR LESS OF KERNEL 'CHRIS'
 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

STEM RUST (Races) TNMH TNMK
 LEAF RUST (Races) Field Races
 STRIPE RUST (Races)
 LOOSE SMUT

POWDERY MILDEW
 BUNT
 OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

SAWFLY
 APHID (Bydv.)
 GREEN BUG
 CEREAL LEAF BEETLE

OTHER (Specify) _____
 HESSIAN FLY
 RACES:
 GP
 A
 B
 C
 D
 E
 F
 G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

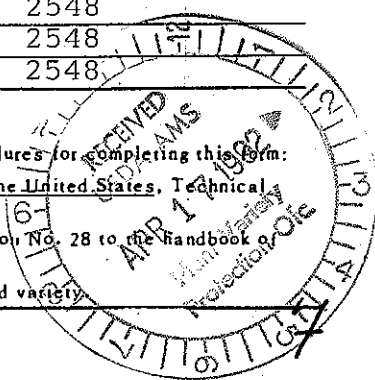
| CHARACTER | NAME OF VARIETY | CHARACTER | NAME OF VARIETY |
|-----------------|-----------------|-----------------------|-----------------|
| Plant tillering | 2548 | Seed size | 2548 |
| Leaf size | 2548 | Seed shape | 2548 |
| Leaf color | 2551 | Coleoptile elongation | 2548 |
| Leaf carriage | 2551 | Seedling pigmentation | 2548 |

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the Handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.



14D. Additional Description of the Variety

2580 AAA 11/11/1993
Pioneer cultivar ~~WBA963A5~~ is a common soft red winter wheat, Triticum aestivum L. em Thell.

Flowering date of WBA963A5 is one day later than Northup King cultivar Coker 983 and nine days earlier than Pioneer cultivar 2548. At St Matthews, SC when seeded about November 20, average first flowering is April 9 or about 131 days after emergence. Flowering is complete about seven days later.

WBA963A5 has averaged 93.5 cm in height (Table 1), about 12 cm taller than Pioneer cultivar 2548.

The plant color of WBA963A5 at boot stage is green, similar to Pioneer cultivar 2551. Anther color of WBA963A5 is yellow.

Anthocyanin has not been present in the stems. However, a waxy bloom is present on the stems. Internodes of WBA963A5 are hollow. Normally four stem nodes are present above ground and internode length between flag leaf and the leaf below is 19 cm. Hairs are present on the last internode of the rachis.

Auricles of WBA963A5 are lacking in anthocyanin and free of hairiness.

Flag leaves are generally erect and twisted at booting. Hairs are absent from the first leaf sheath. A waxy bloom occurs on the flag leaf sheath. The first leaf below the flag leaf averages 12.5 mm wide and 24 cm long.

Spikes of WBA963A5 are generally dense, tapering, awned, and white at maturity. Awns range from 4.0 to 6.5 cm in length. Spike width averages 10 mm and spike length averages 10 cm. However, spike width and length may vary with plant population and level of production.

Glumes of WBA963A5 are long in length, wide, and generally have oblique shoulders. Beaks are acuminate and average 1.7 to 2.5 mm in length.

Coleoptile color is white and seedling anthocyanin is absent. Juvenile plant growth habit is semi-erect.

Kernels of WBA963A5 are red in color, ovate in shape, with rounded cheeks and a shallow crease. The brush is medium in length and not collared. Kernels average 6 mm long and 3.3 mm wide and weigh 31 g per 1000 seed. Phenol reaction is light brown.

WBA963A5 is resistant to leaf rust (Puccinia recondita f. sp. tritici) races currently common in the soft red winter wheat region (Table 1). WBA963A5 has not been tested for specific races of stripe rust (Puccinia striiformis), bunt (Tilletia foetida and Tilletia caries), and loose smut (Ustilago tritici). It has been postulated that WBA963A5 has leaf rust resistance genes Lr3 and Lr11, and stem rust (Puccinia graminis f. sp. tritici) resistance gene Sr10, through seedling screens conducted by the Plant Disease Clinic at the University of Minnesota, St. Paul, MN, in cooperation with the USDA Cereal Rust Lab. WBA963A5 has shown resistance to powdery mildew (Erysiphe graminis f. sp. tritici) in the soft red winter wheat region (Table 1). WBA963A5 is moderately susceptible to soil borne mosaic virus and spindle streak mosaic virus (Table 1).

WBA963A5 is susceptible to biotypes GP, B, C, D, and E of Hessian fly and has not been tested to biotypes A, F, and G. Hessian Fly tests were conducted by the Small Grains Insect

Pests Resistance Group, USDA-ARS, Dept. of Entomology, Purdue University, Lafayette, IN. WBA963A5 has not been tested for sawfly, BYDV, greenbug, or cereal leaf beetle.

WBA963A5 has an excellent yield record when compared with current soft red winter wheat cultivars (Table 1). It also has excellent test weight (Table 1).

The milling and baking properties of WBA963A5 are acceptable and within the range of soft red winter wheat cultivars that are currently available (Table 2).

Table 1. Varietal yield performance and agronomic characteristics as recorded in Pioneer Elite and Advanced Yield Tests during the period 1989-1991.

| Year | Cultivar | Yield | Test weight | Height | Heading date | Lodge | Leaf rust | Powd mild | Leaf blt. | SSMV | HF @ |
|---------|----------|-------|-------------|--------|--------------|-------|-----------|-----------|-----------|------|------|
| | | bu/ac | lbs/bu | cm | Jan. 1 | 1-9¶ | 1-9¶ | 1-9¶ | 1-9¶ | 1-9¶ | 1-9¶ |
| 1991 | WBA963A5 | 66.6 | 53.6 | 99.8 | 98.3 | 5.8 | 6.8 | 6.9 | 5.5 | | 1.0 |
| | 2548 | 55.9 | 50.3 | 96.5 | 102.3 | 8.8 | 6.8 | 4.9 | 7.0 | | 1.0 |
| | 2555 | 50.7 | 48.3 | 106.7 | 104.3 | 8.3 | 6.5 | 4.9 | 5.0 | | 9.0 |
| | COK 9766 | 62.4 | 53.9 | 101.6 | 96.5 | 3.5 | 9.0 | 6.2 | 7.5 | | 6.0 |
| | COK 983 | 63.0 | 55.1 | 91.4 | 97.0 | 8.3 | 5.0 | 7.5 | 4.5 | | 1.0 |
| | FL 302 | 57.7 | 50.3 | 106.2 | 97.5 | 7.3 | 6.0 | 4.3 | 6.0 | | 1.0 |
| | loc # | 11 | 11 | 2 | 2 | 2 | 3 | 6 | 1 | | 1 |
| 1990 | WBA963A5 | 81.9 | 56.9 | 85.1 | 92.0 | | 4.5 | 6.2 | | 5.0 | 1.0 |
| | 2548 | 77.0 | 55.9 | 68.6 | 101.8 | | 5.5 | 5.2 | | 5.0 | 1.0 |
| | 2555 | 69.0 | 54.2 | 67.3 | 103.5 | | 3.0 | 3.8 | | 9.0 | 4.5 |
| | COK 9766 | 76.4 | 55.7 | 81.3 | 98.5 | | 9.0 | 6.1 | | 6.5 | 5.0 |
| | COK 983 | 77.9 | 57.9 | 76.2 | 93.3 | | 2.0 | 7.7 | | 6.0 | 1.0 |
| | FL 302 | 76.6 | 55.0 | 83.8 | 98.3 | | 4.5 | 3.8 | | 4.5 | 1.0 |
| | loc # | 10 | 11 | 1 | 3 | | 1 | 6 | | 1 | 1 |
| 1989 | WBA963A5 | 69.7 | 53.8 | 88.9 | 95.0 | | 7.0 | 5.3 | 5.7 | | 1.0 |
| | 2548 | 61.7 | 53.1 | 75.7 | 107.3 | | 7.3 | 3.9 | 6.5 | | 1.0 |
| | 2555 | 62.5 | 52.3 | 93.5 | 109.4 | | 7.3 | 2.9 | 6.6 | | 9.0 |
| | COK 983 | 60.4 | 53.5 | 80.0 | 92.8 | | 3.7 | 4.5 | 6.4 | | 1.0 |
| | FL 302 | 63.1 | 50.9 | 86.4 | 98.9 | | 6.4 | 3.8 | 6.4 | | 1.0 |
| | loc # | 11 | 11 | 2 | 2 | | 2 | 3 | 3 | | 1 |
| 3-YR-AV | WBA963A5 | 73.2 | 54.9 | 93.5 | 95.1 | 5.8 | 6.3 | 6.4 | 5.6 | 5.0 | 1.0 |
| | 2548 | 63.8 | 53.2 | 81.5 | 103.8 | 8.8 | 6.7 | 4.7 | 6.7 | 5.0 | 1.0 |
| | 2555 | 61.4 | 51.9 | 93.5 | 106.0 | 8.3 | 6.0 | 4.0 | 6.2 | 9.0 | 6.8 |
| | COK 983 | 64.7 | 54.9 | 83.8 | 94.2 | 8.3 | 3.9 | 6.8 | 5.9 | 6.0 | 1.0 |
| | FL 302 | 64.9 | 51.7 | 92.5 | 98.3 | 7.3 | 5.9 | 4.0 | 6.3 | 4.5 | 1.0 |
| | loc # | 32 | 33 | 5 | 7 | 2 | 6 | 15 | 4 | 1 | 3 |

¶ scale 1 to 9, where 9 = excellent or resistant; 1 = poor or susceptible.

@ Data collected from headrows in Hession fly nursery at St. Matthews, SC

1991 Locations: Charles City, VA; Suffolk, VA; Edenton, NC; Plymouth, NC; Greenville, NC; Rowland, NC; Manning, SC; St. Matthews, SC; Norway, SC; Statesboro, GA; Dublin, GA; Americus, GA;

1990 Locations: Charles City, VA; Suffolk, VA; Edenton, NC; Monroe, NC; Greenville, NC; Rowland, NC; Darlington, SC; St. Matthews, SC; Statesboro, GA; Dublin, GA; Americus, GA;

1989 Locations: Charles City, VA; Suffolk, VA; Edenton, NC; Plymouth, NC; Rowland, NC; Darlington, SC; Manning, SC; St. Matthews, SC; Norway, SC; Statesboro, GA; Americus, GA;

Table 2. Soft wheat quality data 1987-1991 from the Pioneer Quality Lab, Johnston, Iowa.

| VARIETY | FLR YLD | BFL YLD | FLR PRO | FLR WR | CK | TOP GRN | TGR AB | MILLING SCORE | BAKING SCORE |
|----------------------------|------------|------------|------------|-----------|------|------------|-----------|------------------|-----------------|
| <i>2580' AAA 16mm 1993</i> | | | | | | | | | |
| WBA963A5 | 67.9 | 34.6 | 8.6 | 54.9 | 18.9 | 3.5 | 6.7 | 4 | 5 |
| # obs | 11 | 11 | 11 | 11 | 6 | 6 | 6 | | |
| 2548 | 67.8 | 35.9 | 8.7 | 57.1 | 18.7 | 3.5 | 6.3 | 5 | 4 |
| # obs | 38 | 38 | 38 | 37 | 27 | 26 | 26 | | |
| 2555 | 69.6 | 41.0 | 8.5 | 54.5 | 19.9 | 4.4 | 8.0 | 8 | 8 |
| # obs | 49 | 49 | 49 | 49 | 37 | 36 | 36 | | |
| COK 983 | 70.8 | 36.2 | 9.2 | 53.1 | 19.7 | 5.3 | 7.1 | 7 | 9 |
| # obs | 48 | 48 | 48 | 47 | 36 | 36 | 35 | | |
| COK 9766 | 67.9 | 35.2 | 9.4 | 55.1 | 19.5 | 4.4 | 7.6 | 5 | 6 |
| # obs | 15 | 15 | 15 | 15 | 7 | 7 | 7 | | |
| FL 302 | 71.1 | 37.0 | 8.8 | 53.5 | 19.3 | 4.2 | 6.2 | 7 | 7 |
| # obs | 48 | 48 | 48 | 48 | 35 | 33 | 33 | | |

Trait abbreviations used in the above table.

FLR YLD -- Flour yield (%)

BFL YLD -- Break flour yield (%)

FLR PRO -- Flour protein (%)

FLR WR -- Flour Alkaline Water Retention Capacity (%)

CK -- Cookie diameter (cm)

TOP GRN -- Top grain rating of cookie (1-9)
(1= poor , 9= excellent)

TGR AB -- Top grain abnormalities of cookie (1-9)
(1= narrow valleys, 9= wide valleys)

MILLING SCORE -- Rating which weights Flour yield 60% and
Break flour yield 40% (1= poor, 9= excellent)

BAKING SCORE -- Rating which weights Cookie spread 60% and
AWRC 40% (1= poor, 9= excellent)

14E. Exhibit E. Statement of the Basis of Applicant's Ownership

Pioneer Hi-Bred International, Inc., Plant Breeding Division, believes it is the sole, original, and first breeder of the ^{'2580' AAA 11 Mar 1993} ~~WBA963A5~~ cultivar of soft red winter wheat for which it solicits a certification of protection.